WM-B14

SERVICE MANUAL

West Germany Model

Model Name Using Similer Mechanism	WM-31/41
Tape Transport Mechanism Type	MT-WMA10-04

SPECIFICATIONS

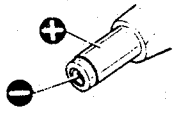
Frequency response
40—14,000 Hz
Power output
10 mW + 10 mW at DC operation
(at 10% harmonic distortion)
load impedance 32 ohms
Power requirements
3 V DC
Two R6 (size AA) batteries
Sony rechargeable battery BP-700
DC IN 3 V jack accepts
Optional Sony AC-D2L AC power adaptor for use on 220 V AC, 50 Hz
Battery life
Approx. 8 hours using Sony alkaline batteries AM3 (N)
Dimensions
Approx. 88 × 122 × 31.5 mm (w/h/d)
not incl. projecting parts and controls
Weight
Approx. 205 g
incl. batteries, not incl. other accessories

Accessories supplied
Stereo headphones (Open-air type, 1)
Battery charger (1)

Design and specifications subject to charge without notice.

Note
This appliance comforms with EEC Directives 76/889 and 82/499 regarding interference suppression.

Note: If an AC power adaptor or a car battery cord not manufactured by Sony is used, a fuse must be installed in the AC power adaptor or the car battery cord and the polarity of the plug must be as illustrated.



MICROFILM

CASSETTE PLAYER

SONY®

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

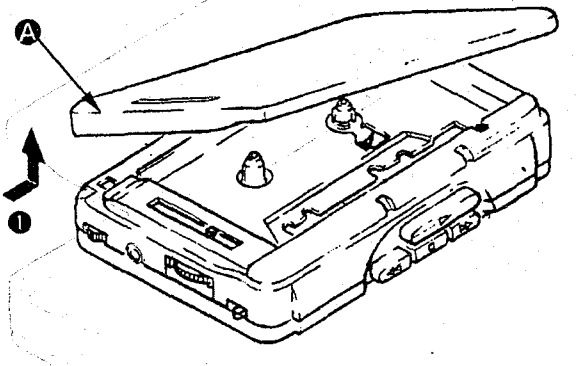
Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SECTION 1
DISASSEMBLY AND INSTALLATION

1-1. CASSET HOLDER ASSY REMOVAL

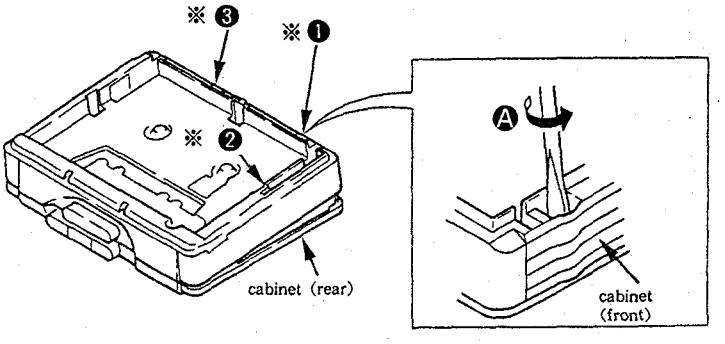
1) Open the cassette holder.
2) Move the left latch in the direction of the arrow ❶ to release it.
3) Release the right latch.
4) Remove the cassette up spring.

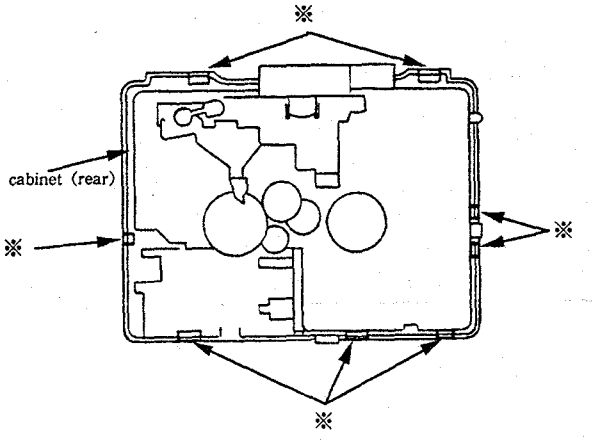


1-2. CABINET (REAR) ASSY REMOVAL

Note :Follow the disassembly procedure the numerical order given.

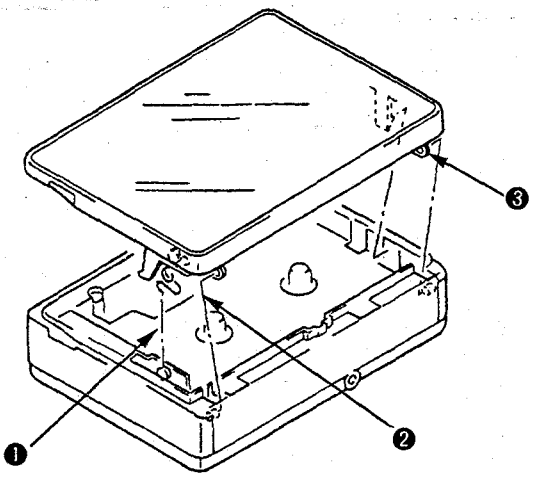
1) Insert a driver (−) in to the portion (※).
2) Move the driver in the direction of the arrow (Ⓐ).
3) Release the claw (※).





1-3. CASSET HOLDER ASSY INSTALLATION

Note :Follow the disassembly procedure the numerical order given.



SECTION 2
MECHANICAL AND ELECTRICAL ADJUSTMENT

MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab :
   playback head　　pinch roller
   capstan　　idlers
   rubber belts
2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

Torque	Meter Reading	Torque Meter
Foward	22−45g・cm (0.31−0.63oz・inch)	CQ-102C
Fast Forwand and Rewind	55−150g・cm (0.77−2.1oz・inch)	CQ-201B
Back Tension	1−2.5g・cm (0.014−0.35oz・inch)	CQ-102C

Tape Tension Measurement

Meter	Meter Reading
CQ-403A	more than 90g (1.26oz)

ELECTRICAL ADJUSTMENTS

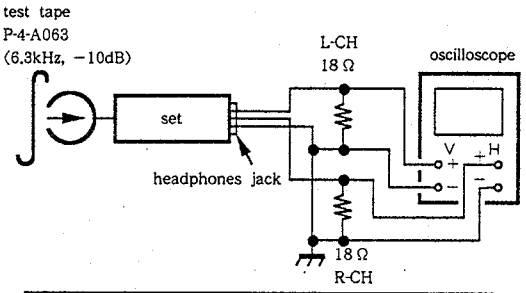
CASSETTE SECTION

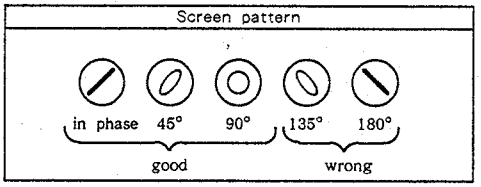
Playback Head Phase Check

Note :When replacing the head, check the both L-ch and R-ch phases.

Procedure :

Phase Check
Mode : playback

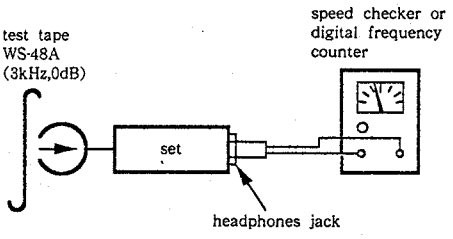




Tape Speed Adjustment

Procedure :

Mode : playback

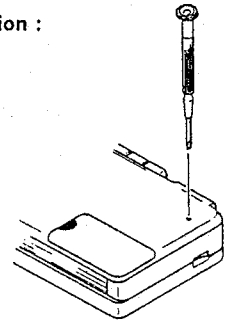


Specification :

speed checker	digital frequency counter
±1%	2,970−3,030Hz

Frequency difference between the beginning and the end of the tape should be within±2.5% (±75%Hz).

Adjustment Location :



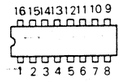
SECTION 3
DIAGRAMS

Semiconductor Location

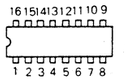
Ref.No	Location
IC301	D-10
IC302	H-9
Q301	I-8
Q302	H-8

Semiconductors Lead Layout

LA4570



NJM2063AD



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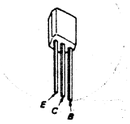
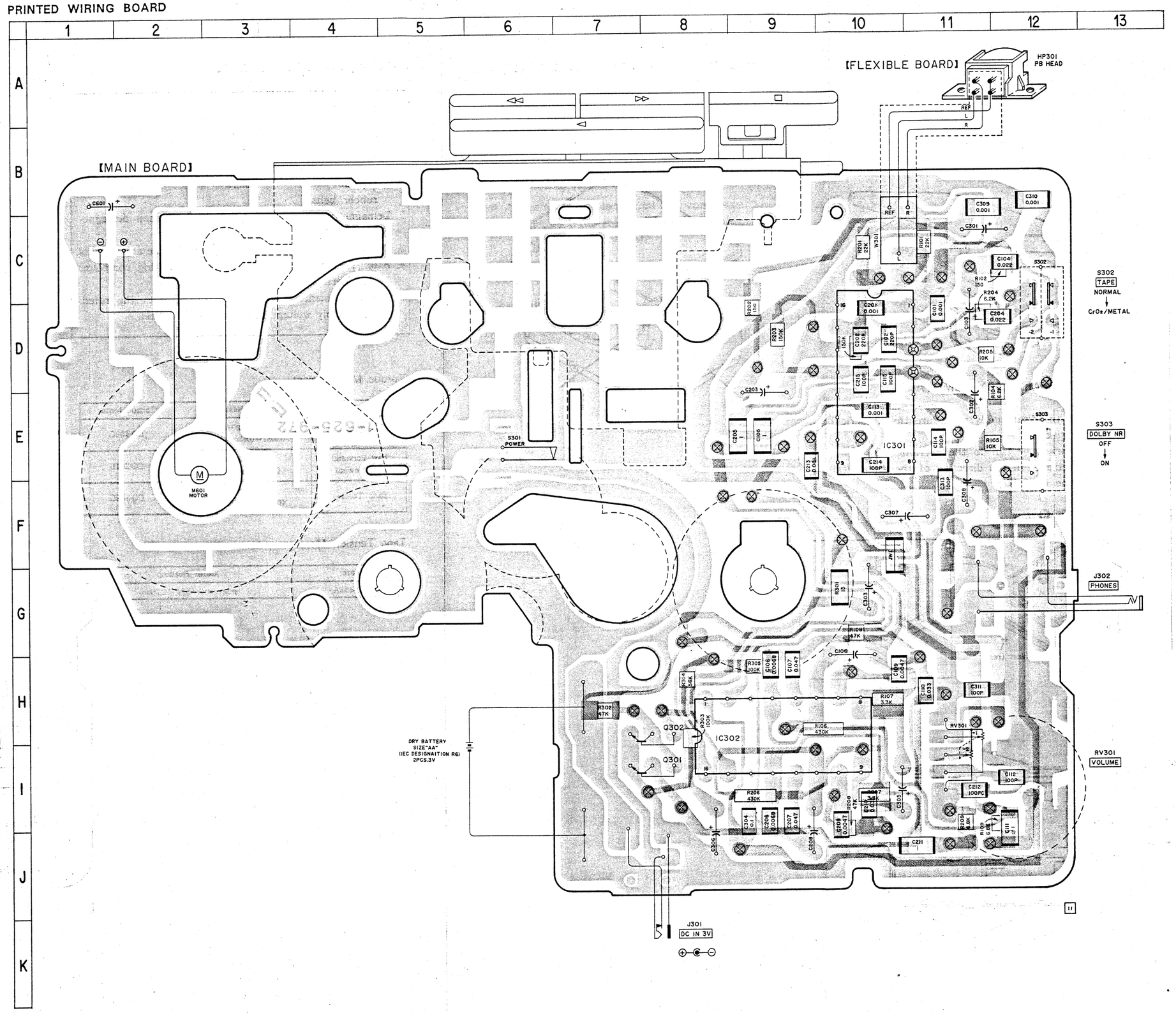


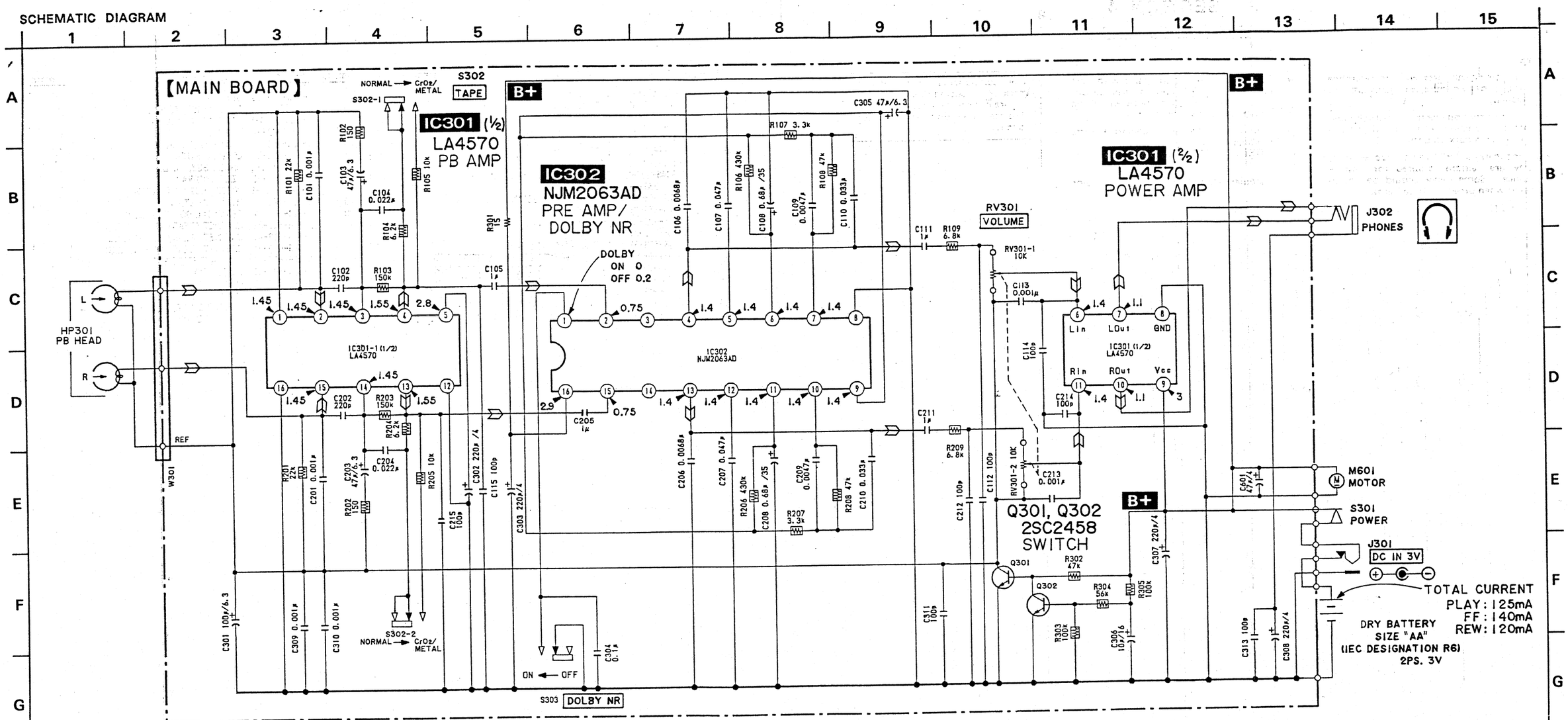
Note:

- ○—— : parts extracted from the component side.
- ●—— : parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.
- ⊗ : Through hole.
- ▒▒ : Pattern on the side which is seen.
- ▒▒ : Pattern of the rear side.

PRINTED WIRING BOARD



SCHEMATIC DIAGRAM

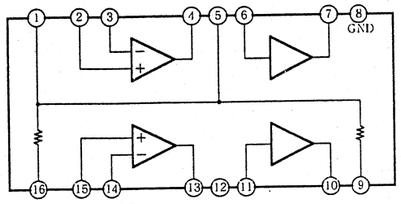


Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- ⊣W⊢ : printed resistor.

Ref. No.	Switch	Position
S301	POWER	OFF
S302	TAPE	NORMAL
S303	DOLBY NR	OFF

- Power voltage is dc 3V and fed with requrated dc power, supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground in playback mode.
  no mark: PLAY
- Voltages are taken with a VOM (50 kΩ/V).
  Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ▷ : PB



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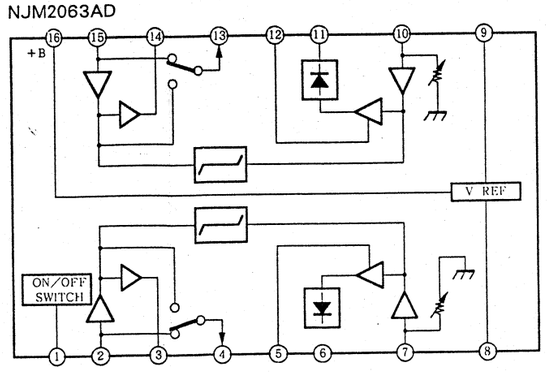


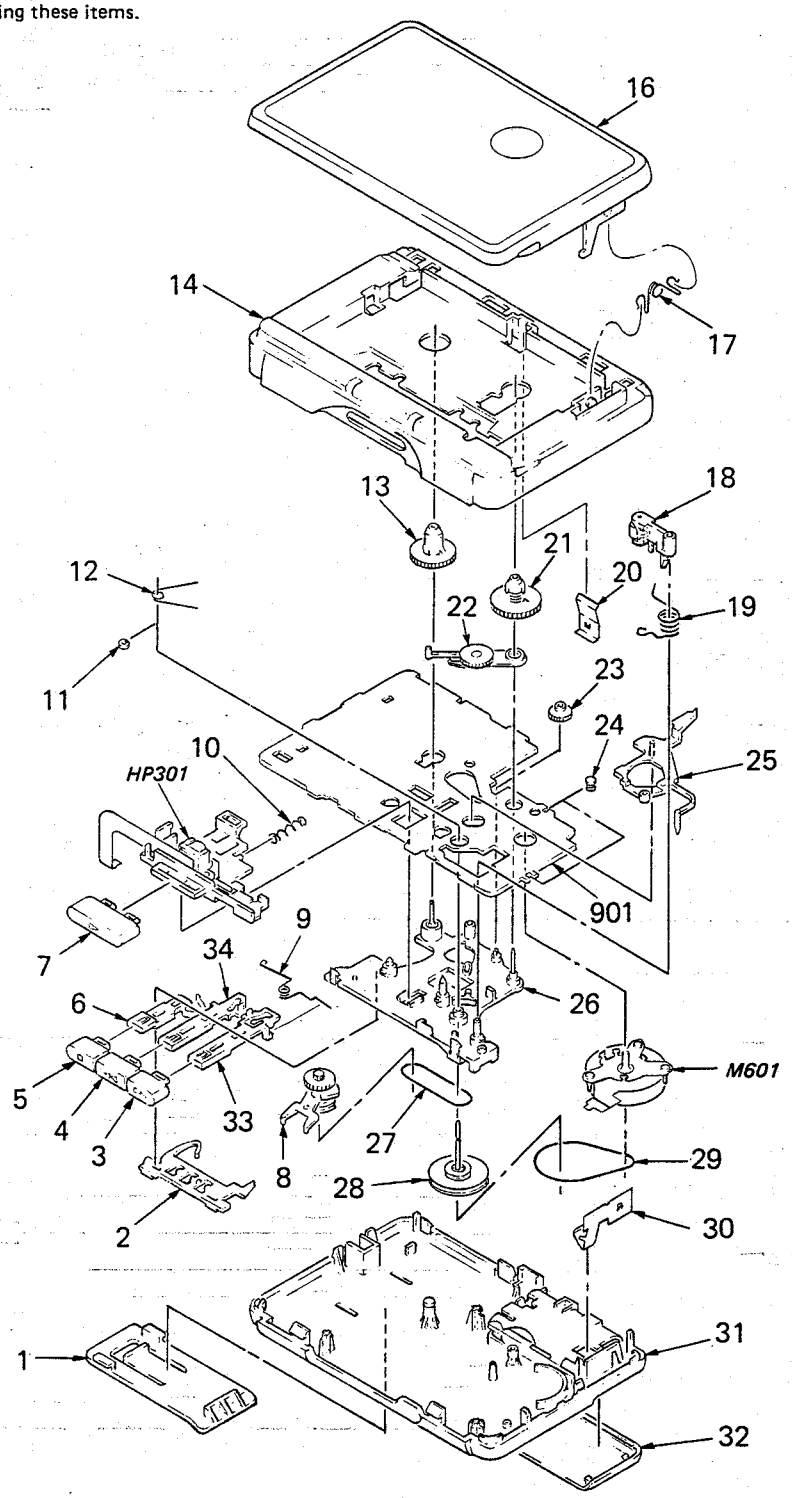
SECTION 4
EXPLODED VIEW

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) ... KNOB, BALANCE (WHITE)
  ↑ Cabinet's Color ↑ Parts Color

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

(1)



Ref.No	Part No.	Description	Remark
1	3-346-518-01	CLIP, BELT	
2	3-346-522-01	PLATE, LOCK	
3	3-346-513-11	BUTTON (FF)	
4	3-346-514-11	BUTTON (REW)	
5	3-346-515-11	BUTTON (STOP)	
6	3-346-528-01	LEVER (STOP)	
7	3-346-512-11	BUTTON (PLAY)	
8	X-3346-503-1	GEAR ASSY, MIDWAY	
9	3-346-539-01	SPRING (FR)	
10	3-335-605-01	SPRING, COMPRESSION	
11	3-343-358-01	RING, RETAINING	
12	3-346-538-01	SPRING (GROUND)	
13	3-346-525-01	GEAR (S REEL)	
14	3-346-520-61	CABINET (FRONT) (TC-A)	
16	X-3346-550-1	HOLDER ASSY(TC-C) (R),CASSETTE (RED)	
16	X-3346-551-1	HOLDER ASSY(TC-C) (B),CASSETTE (BLK)	
16	X-3346-552-1	HOLDER ASSY(TC-C) (L),CASSETTE (BLU)	
17	3-346-509-01	SPRING	
18	X-3334-005-1	PINCH ROLLER ASSY	
19	3-335-608-01	SPRING	

Ref.No	Part No.	Description	Remark
20	3-346-516-01	SPRING	
21	X-3346-502-1	TABLE ASSY, T REEL	
22	X-3346-504-1	GEAR ASSY, PLAY	
23	3-334-089-01	GEAR, FF	
24	3-335-652-01	CUSHION (C), MOTOR	
25	3-346-523-01	LEVER (SHUT-OFF)	
26	X-3346-501-1	BASE ASSY, GUIDE	
27	3-335-604-01	BELT, MIDWAY	
28	X-3346-505-1	WHEEL ASSY, CAPSTAN	
29	3-334-421-01	BELT, CAPSTAN	
30	3-334-057-01	TERMINAL BOARD, RELAY	
31	3-346-519-01	CABINET (REAR) (TC-B) (BLK)	
31	3-346-519-41	CABINET (REAR) (TC-B) (RED)	
31	3-346-519-51	CABINET (REAR) (TC-B) (BLU)	
32	3-346-517-01	LID, BATTERY CASE	
33	3-346-526-01	LEVER (FF)	
34	3-346-527-01	LEVER (REW)	
601	1-541-572-11	MOTOR, DC	
901	A-3060-111-A	MOUNTED PCB, AUDIO	
HP301	A-3108-292-A	PC BOARD ASSY, HEAD	

SECTION 5
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No	Part No.	Description				Remark
901	A-3060-111-A	MOUNTED PCB, AUDIO				
		CAPACITOR				
C101	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V	
C102	1-163-125-00	CERAMIC CHIP	220PF	10%	50V	
C103	1-124-224-00	ELECT	47MF	20%	6.3V	
C104	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C105	1-162-638-11	CERAMIC CHIP	1MF		16V	
C106	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V	
C107	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V	
C108	1-131-346-00	TANTALUM	0.68MF	10%	35V	
C109	1-163-017-00	CERAMIC CHIP	0.0047MF	5%	50V	
C110	1-163-034-00	CERAMIC CHIP	0.033MF	5%	25V	
C111	1-162-638-11	CERAMIC CHIP	1MF		16V	
C112	1-163-117-00	CERAMIC CHIP	100PF	10%	50V	
C113	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V	
C114	1-163-117-00	CERAMIC CHIP	100PF	10%	50V	
C115	1-163-117-00	CERAMIC CHIP	100PF	10%	50V	
C201	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V	
C202	1-163-125-00	CERAMIC CHIP	220PF	10%	50V	
C203	1-124-224-00	ELECT	47MF	20%	6.3V	
C204	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C205	1-162-638-11	CERAMIC CHIP	1MF		16V	
C206	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V	
C207	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V	
C208	1-131-346-00	TANTALUM	0.68MF	10%	35V	
C209	1-163-017-00	CERAMIC CHIP	0.0047MF	5%	50V	
C210	1-163-034-00	CERAMIC CHIP	0.033MF	5%	25V	
C211	1-162-638-11	CERAMIC CHIP	1MF		16V	
C212	1-163-117-00	CERAMIC CHIP	100PF	10%	50V	
C213	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V	
C214	1-163-117-00	CERAMIC CHIP	100PF	10%	50V	
C215	1-163-117-00	CERAMIC CHIP	100PF	10%	50V	
C301	1-124-225-00	ELECT	100MF	20%	6.3V	
C302	1-124-434-00	ELECT	220MF	20%	4V	
C303	1-124-434-00	ELECT	220MF	20%	4V	
C304	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C305	1-124-224-00	ELECT	47MF	20%	6.3V	
C306	1-124-462-00	ELECT	10MF	20%	16V	
C307	1-124-434-00	ELECT	220MF	20%	4V	
C308	1-124-434-00	ELECT	220MF	20%	4V	
C309	1-163-205-00	CERAMIC CHIP	0.001MF	10%	50V	
C310	1-163-205-00	CERAMIC CHIP	0.001MF	10%	50V	
C311	1-163-117-00	CERAMIC CHIP	100PF	10%	50V	
C313	1-163-117-00	CERAMIC CHIP	100PF	10%	50V	
C601	1-124-432-00	ELECT	47MF	20%	4V	
HP301	A-3108-292-A	PC BOARD ASSY, HEAD				
IC301	8-759-802-85	IC LA4570				
IC302	8-759-701-74	IC NJM2063AD				
J301	1-565-286-11	JACK, OUTER POWER				
J302	1-565-287-11	JACK (PHONES)				
JR1	1-216-296-00	METAL GLAZE	0	5%	1/8W	
M601	1-541-572-11	MOTOR, DC				
Q301	8-729-600-27	TRANSISTOR 2SC2458				
Q302	8-729-600-27	TRANSISTOR 2SC2458				
		RESISTOR				
R101	1-249-433-11	RES, CARBON	22K	5%	1/32W	
R102	1-249-407-11	RES, CARBON	150	5%	1/32W	
R103	1-215-473-00	RES, CARBON	150K	5%	1/32W	
R104	1-215-440-00	RES, CARBON	6.2K	5%	1/32W	
R105	1-249-429-11	RES, CARBON	10K	5%	1/32W	
R106	1-215-484-00	RES, CARBON	430K	5%	1/32W	
R107	1-249-423-11	RES, CARBON	3.3K	5%	1/32W	
R108	1-249-437-11	RES, CARBON	47K	5%	1/32W	
R109	1-249-427-11	RES, CARBON	6.8K	5%	1/32W	
R201	1-249-433-11	RES, CARBON	22K	5%	1/32W	
R202	1-249-407-11	RES, CARBON	150	5%	1/32W	
R203	1-215-473-00	RES, CARBON	150K	5%	1/32W	
R204	1-215-440-00	RES, CARBON	6.2K	5%	1/32W	
R205	1-249-429-11	RES, CARBON	10K	5%	1/32W	
R206	1-215-484-00	RES, CARBON	430K	5%	1/32W	
R207	1-249-423-11	RES, CARBON	3.3K	5%	1/32W	
R208	1-249-437-11	RES, CARBON	47K	5%	1/32W	
R209	1-249-427-11	RES, CARBON	6.8K	5%	1/32W	
R301	1-216-154-00	METAL GLAZE	15	5%	1/8W	
R302	1-249-437-11	RES, CARBON	47K	5%	1/32W	
R303	1-249-441-11	RES, CARBON	100K	5%	1/32W	
R304	1-249-438-11	RES, CARBON	56K	5%	1/32W	
R305	1-249-441-11	RES, CARBON	100K	5%	1/32W	
RV301	1-238-072-11	RES, VAR, CABON 10K/10K (VOLUME)				
S301	1-570-549-11	SWITCH, LEAF (POWER)				
S302	1-571-478-11	SWITCH, SLIDE (TAPE)				
S303	1-571-478-11	SWITCH, SLIDE (DOLBY NR)				
W301	1-565-288-11	HOUSING, CONNECTOR 3P				
		ACCESSORY & PACKING MATERIAL				
	*3-346-549-01	CUSHION (FRONT)				
	*3-346-550-01	CUSHION (REAR)				
	*3-346-772-01	INDIVIDUAL CARTON				
	3-786-019-41	MANUAL, INSTRUCTION				
	8-952-313-90	HEADPHONE MDR-005L/B SET				